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Aegle marmeloes Gum as Tablet Binder and its Evaluation

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Abstract: Various types of plant gums available like alginic acid, gelatin maize starch and potato starch have been used as binder in pharmaceutical formulation. But still finding novel binder is useful in the pharmaceutical industry for manufacture of tablets. Aegle marmelos gum was found for its binding property. Labetalol HCL tablets were prepared by wet granulation technique using Aegle marmelos gum as a tablet binder .the prepared tablets were evaluated for physiochemical characteristics and the binding efficacy of the Aegle marmelos gum was compared with the standard binder gum acacia (G.A) at similar concentration (5% w/w), the granule size 26 to 30^{o} angle of repose and 19.62 to 11.84% fines the evaluation of tablet showed 1.10-0.26%w/w friability 3 to 5 min disintegration time.tablets at 5% w/w binder concentration showed more optimum results as tablet binder.aegle marmelos gum was found to be useful for the preparation of uncoated tablet dosage form.
Keywords: Aegle marmelos gum, tablet binder,Labetalol HCL.

Introduction:

Researchers are trying to introduce new excipients for drug formulations to exhibit to varied function. The popularity of new excipient research is growing tremendously over the last few decades due to increasing demand for safe, economical and functionally reliable substitutes for the existing synthetic ones. Almost all therapeutic formulations used for humans and others include excipients [(1-3)].

Binders are pharmaceutical excipients that are commonly employed in tablet formulation to impact cohesion on the powder mix and hence improve on flow properties on the granules [(4)]. One of the gum is obtained fruits of Aegle marmeloes belonging to the family (Rutaceae).

A one of the tree is widely found in Shivaliks & Himalayas. The gum possesses binding properties and to evaluate its solubility as binding agent in Labetalol HCL tablet formulations.

Therefore the aim of the present study is to evaluate the Aegle marmeloes gum as tablet binder employing Labetalol HCL as a model drug.

2] Experimental:

2.1] Materials:

Labetalol HCL was used as a model drug. Aegle marmeloes gum belonging to the family (Rutaceae) collected from local area of Maharashtra.

2.2] Purification of Aegle marmeloes gum [5]:

The Aegle marmeloes gum and dissolved in distilled water. The concentrated solution was separated and dried at 50°. The dried gum was powdered and stored tightly closed container.

2.3] Standardization of MIG:

Loss on drying: -The 1.0 gm. gum was dried at 105° till the constant weight of gum was obtained. The loss on drying was found to be less than < 6% w/w.

Ash value: -Ash content was found to be less than 6% w/w.
PH: -The PH of the gum was found to be in the range of 6.0 to 6.5.

2.4] Preparation and Evaluation of Granules [6-7]:

The granules were prepared by wet granulation method. Labetalol HCL was used as a model drug to formulate granules. Starch was used as disintegrate; lactose was used as diluents and talc as lubricant respectively. Gum was dissolved in distilled water to produce binder solution. Binder solution was prepared in different concentration as 2.5, 5, 4.5% w/w (table 1).

All other ingredients were dried and mixed mortar. Binder solution was slowly added into mixture. The wet mass was granulated by passing them manually through a number 12 mesh sieve to produce granules. These granules were dried at 50° in hot air oven. These dried granules were then pass through sieve no. 16.The granules evaluated for percentage of fine, particle size and angle of repose(table 2)

2.5] Preparation and Evaluation of Tablets:

The tablets were compressed by using cadmach single punch tablet machine fitted with flat faced 8 mm punches. Tablets were prepared and stored in closed container for 10 days. No evidence of physical changes were observed. The tablets were evaluated for content uniformity, hardness, friability, disintegration time. The tablets were evaluated and results were shown in table 3.

Table 1:- Labetalol HCL formulation containing gum of Aegle marmeloes as a binder

Ingredients (mg/tablet)	Formulation		
	F1(2.5% Binder)	F2(5% Binder)	F3(7.5%Binder)
Labetalol HCL	40	40	40
Binder	2.5	5	7.5
Lactose	51.5	55.5	59.5
Magnesium stearate	4	4	4
Talc	2	2	2
Total	100	100	100

All the batch contained 2% w/w talc

Table 2:- Evaluation of granules prepared from Aegle marmeloes gum (AMG)

Formula binder weight (% w/w)	**Percentage at fines**	**Particle size(mm)**	**Angle of Repose**
AMG 2.5%	19.62	0.46	26.00
AMG 5%	15.44	0.54	27.30
AMG 7.5%	11.84	0.64	29.20
GA 5%	21.00	0.55	34.23

Table 3:-Evaluation of Tablets:-

Formula binder weight (%w/w)	Content Uniformity (%)	Hardness (kg/cm2)	Friability (%)	Disintegration time(min)
AMG 2.5 %	98.32	5.20	1.08	34.00
AMG 5.0 %	99.50	5.34	0.36	5.10
AMG 7.5 %	98.64	5.48	0.20	7.00
GA 5.0 %	90.20	6.6	1.10	3.04

Result and Discussion:

The binder of natural gum is pH range between 6.0 &6.5. The prepared granules were evaluated for particle size, percentage of fines & angle of repose. It was observed that concentration of binder increased the percentage of fine reduced. All batches showed good flow property.

Three batches of tablets of 2.5, 5.0, 7.5 concentration were prepared. The prepared tablets were evaluated for content uniformity, hardness, friability.

Conclusion:

From the present study, it can be concluded that Aegle marmeloes gum can be used as binding agent in tablet formulations and substituted for more expensive binders.

So natural materials can be extensively used in the field of drug delivery because they are readily available, low cost ecofriendly potentially degradable and compatible due to their natural origin.

Disintegration time all prepared batches 5% w/w concentration shows more optimum result as tablet binder.

References

1. Hans E.J (2008). Biopharmaceutics applications in drug development ,springer, USA139.
2. Ashok k, & Mahesh V.C (2006) ,Excipient development for Pharmaceutical, Biotechnology & drug delivery systems, Taylor &Francies New York.1-32.
3. Khar R.K , Ahuja A, Ali J (1997) ,Mucoadshesive Drug delivery in ,jainNk,editor,controlled& novel drug delivery New delhi;CBs publishers.80-353.
4. EichieFE,AmalimeAE,Evaluation of the binder effects of the binder effects of the gum mucilages of cisscuspopulnea and acassia Senegal on the mechanical properties of paracetamoltablets,Afr .J biotech 2007; 6(19);2208-11.
5. The welth of India, Raw Materials Vol.VI;M council of scientific and industrial research ,new delhi,-26584.
6. Kale RH, Joshi UM, AmbhoreDP,SitaphateGR,Evaluation of delomixregiaraf endospermic mucilage as tablet binder ,INT J chemtech Res 2009;1(1);11-15.
7. GordenRE,rashanke TW, & Fonner DE, Pharmaceutical dosage forms,tablets;vol2, LachmanL. Liberman HA, Schwartz JB EDS; New York; Maercel dekker;1999;245-335.

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